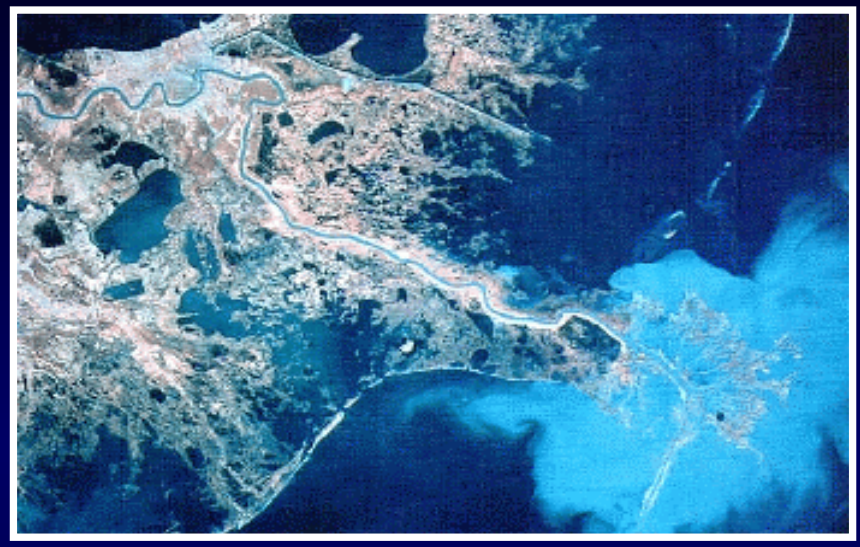
Mississippi River Water Quality: Implications for Freshwater Diversions



Coastal Wetland Planning, Preservation, and Restoration Act (CWPPRA) Outreach Committee Topic Series

December 2001

Questions to consider...

1) *Geologic history of Louisiana and current situation regarding coastal wetlands loss?*

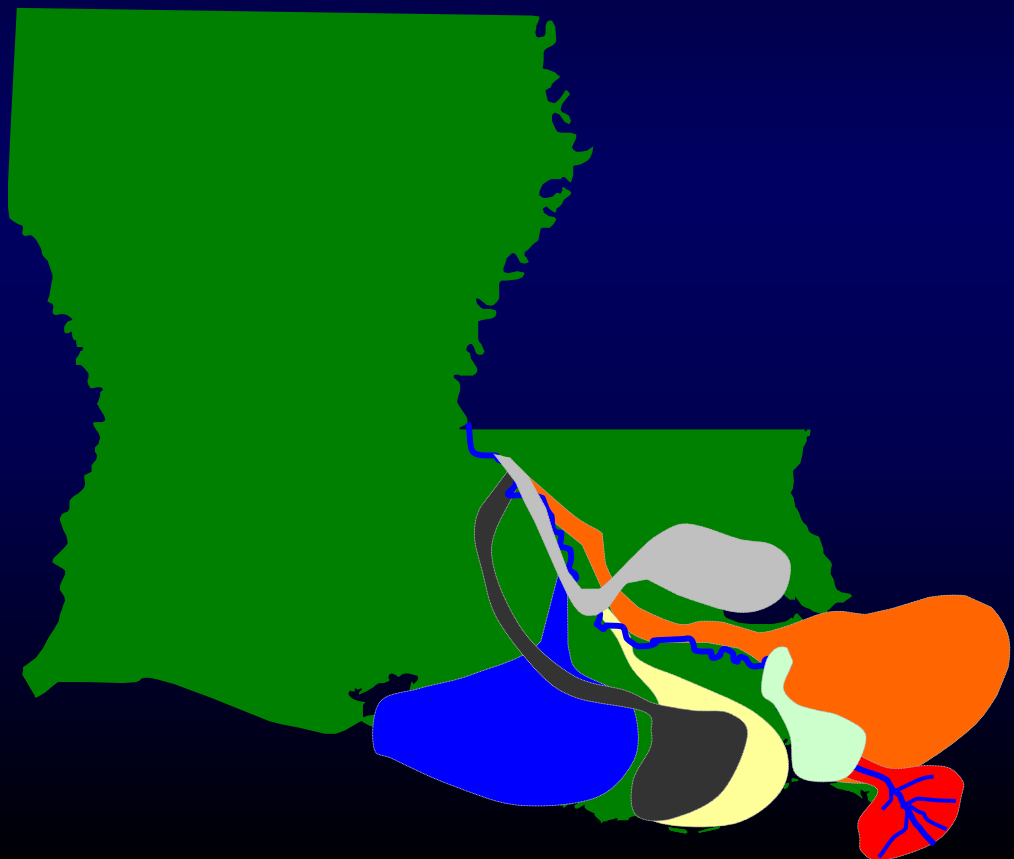
2) *Role and suitability of the Mississippi River as coastal restoration tool?*

3) *Specific performance and issues regarding water quality at freshwater diversion sites.*

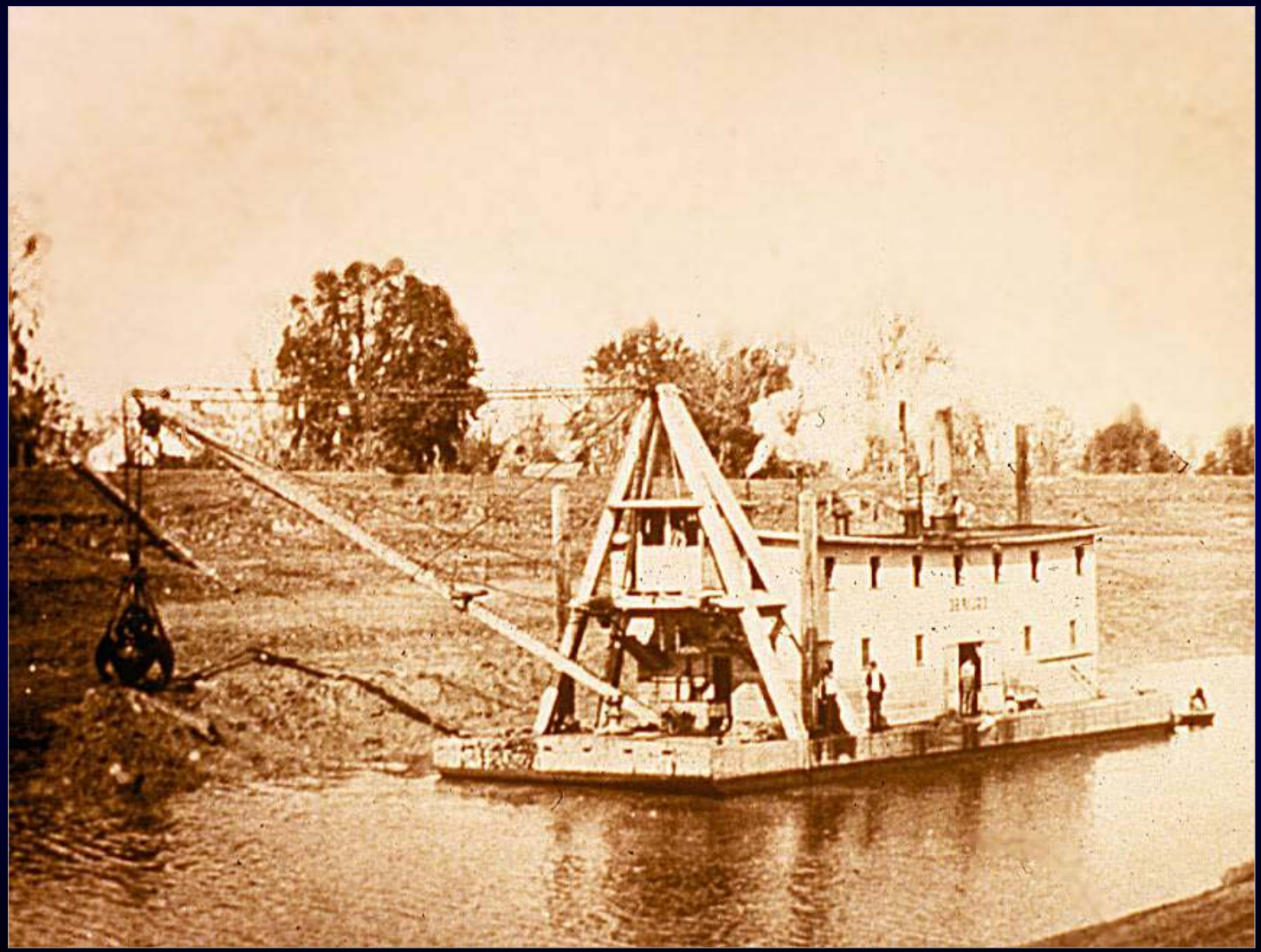
What is the geologic history of coastal Louisiana?

World's third largest river basin

Delta	Age (years)
Sale/Cypremort	4600-7000
Cocodrie	3500-4600
Teche	2800-3500
St. Bernard	1000-2800
Lafourche	300-1000
Plaquemine	500-750
Modern/Balize	500

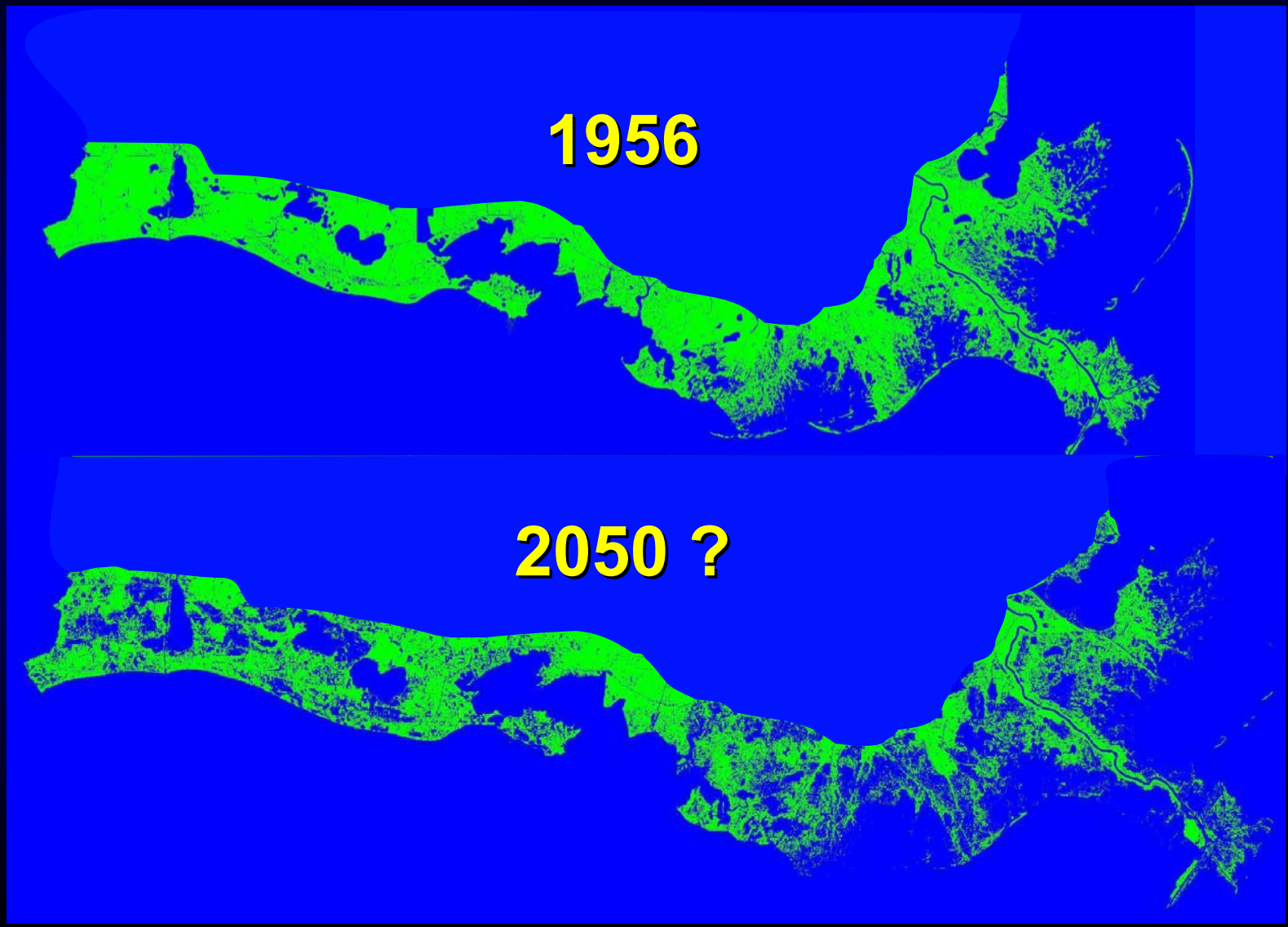


The Great Flood of 1927



160-200 million metric tons a year

Predicted coastal land loss by 2050



Coastal Restoration Methods

- Vegetative

- Structural

- Hydrologic - <u>Diversions</u>

Pollution and Policy

Pollution and Policy

- National Environmental Policy Act -NEPA (1969)
- **Endangered Species Act (1973)**
- Federal Insecticide, Fungicide, and Rodenticide Act (1947, 1970, 1972)
- Federal Water Pollution Control Act (1972, 1977)

Clean Water Act (1977)

Section 402 – established National Pollutant Discharge Elimination System (NPDES) program, requires permits for 4 major classes of storm water discharge and advocated use of Best Management Practices (BMPs) to minimize or eliminate the introduction of pollutants.

Section 319 establishes a national program for the assessment and **control of non point source pollution impacts to state waters.**

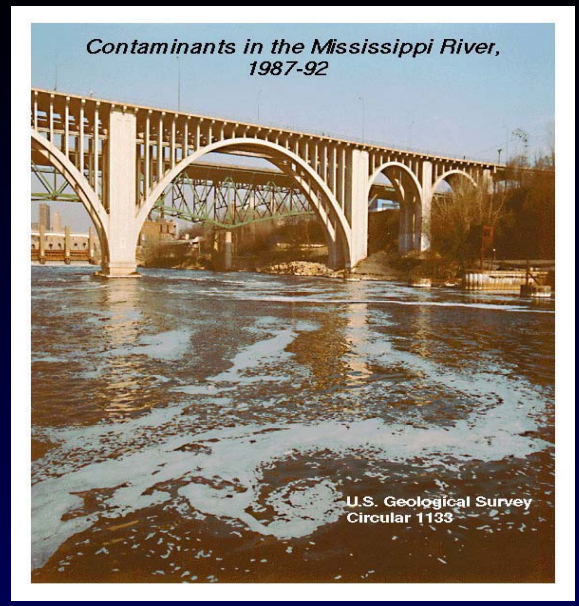
Section 303 requires state list of impaired water bodies.

How suitable is the Mississippi River's water quality today?

Status of River Water Quality?

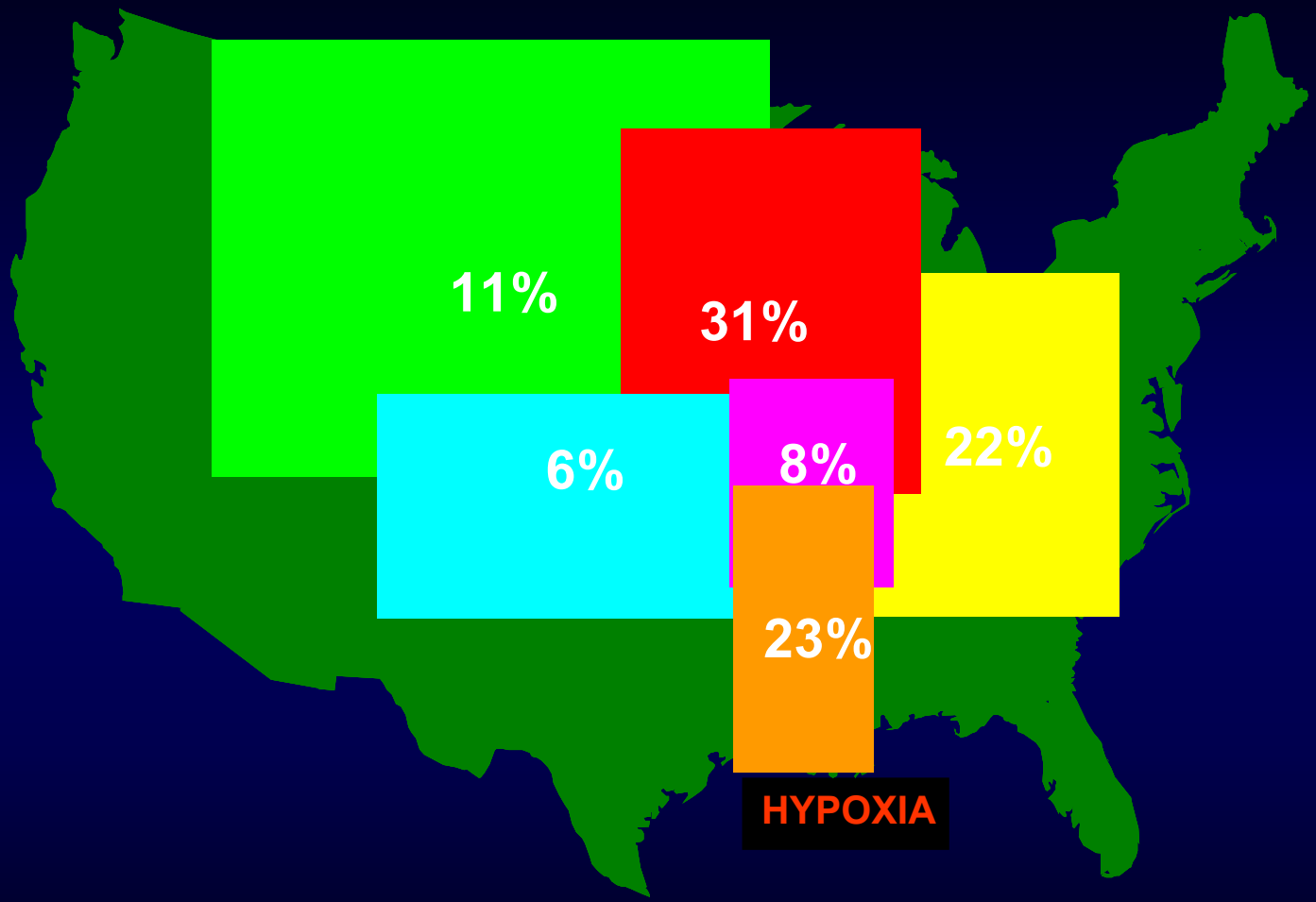
- LADEQ: Healthy fish populations of bass, catfish, buffalo, and shad
- Detectable toxins below FDA thresholds
- In the Mississippi an impaired water body?

Status of River Water Quality



- 5-year study to quantify types and distribution of contaminants.
- Samples collected along the entire length of River and distributaries.
- Results?

Nutrients



Nutrients

Nitrogen Application

(tons/m^2/year)

no data

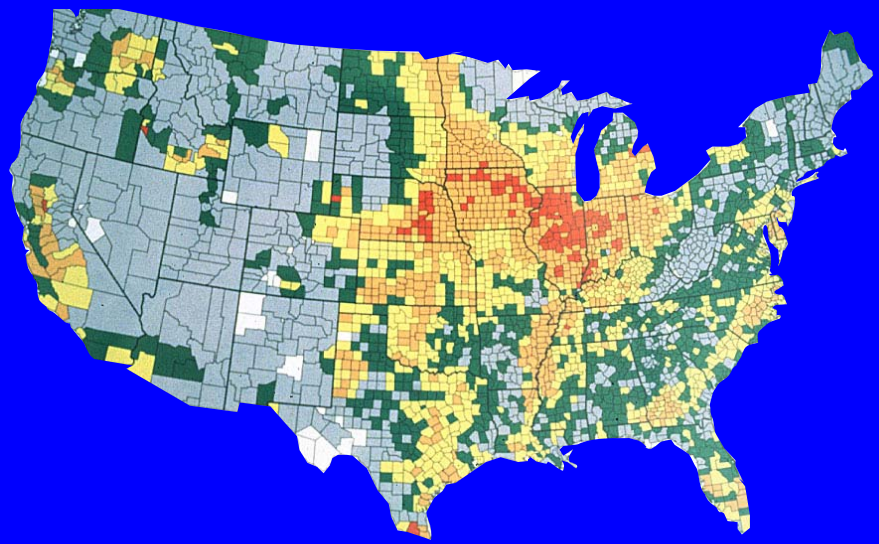
< 1.0

1 - 3.3

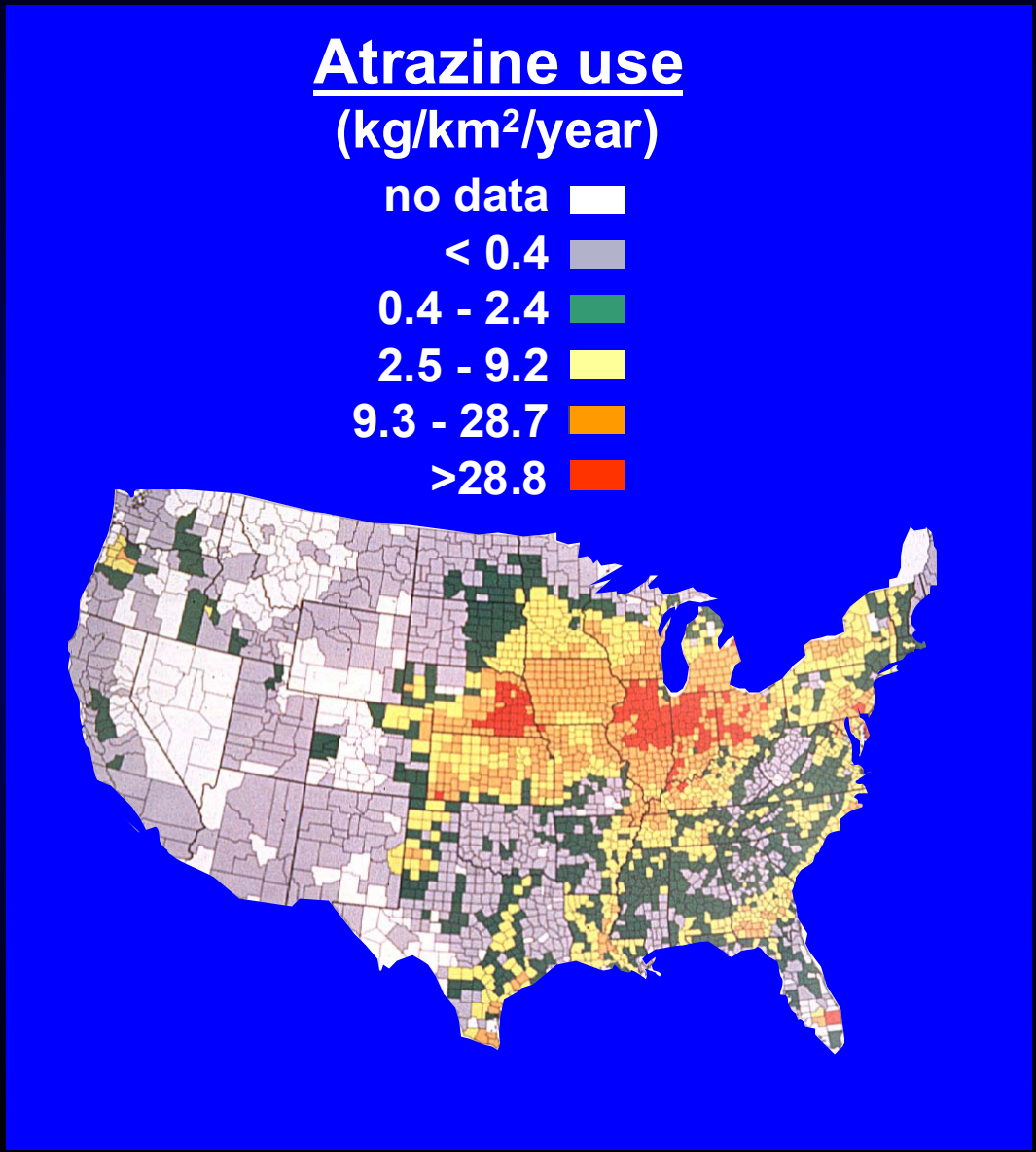
3.4 - 8.1

8.1 - 20

>20

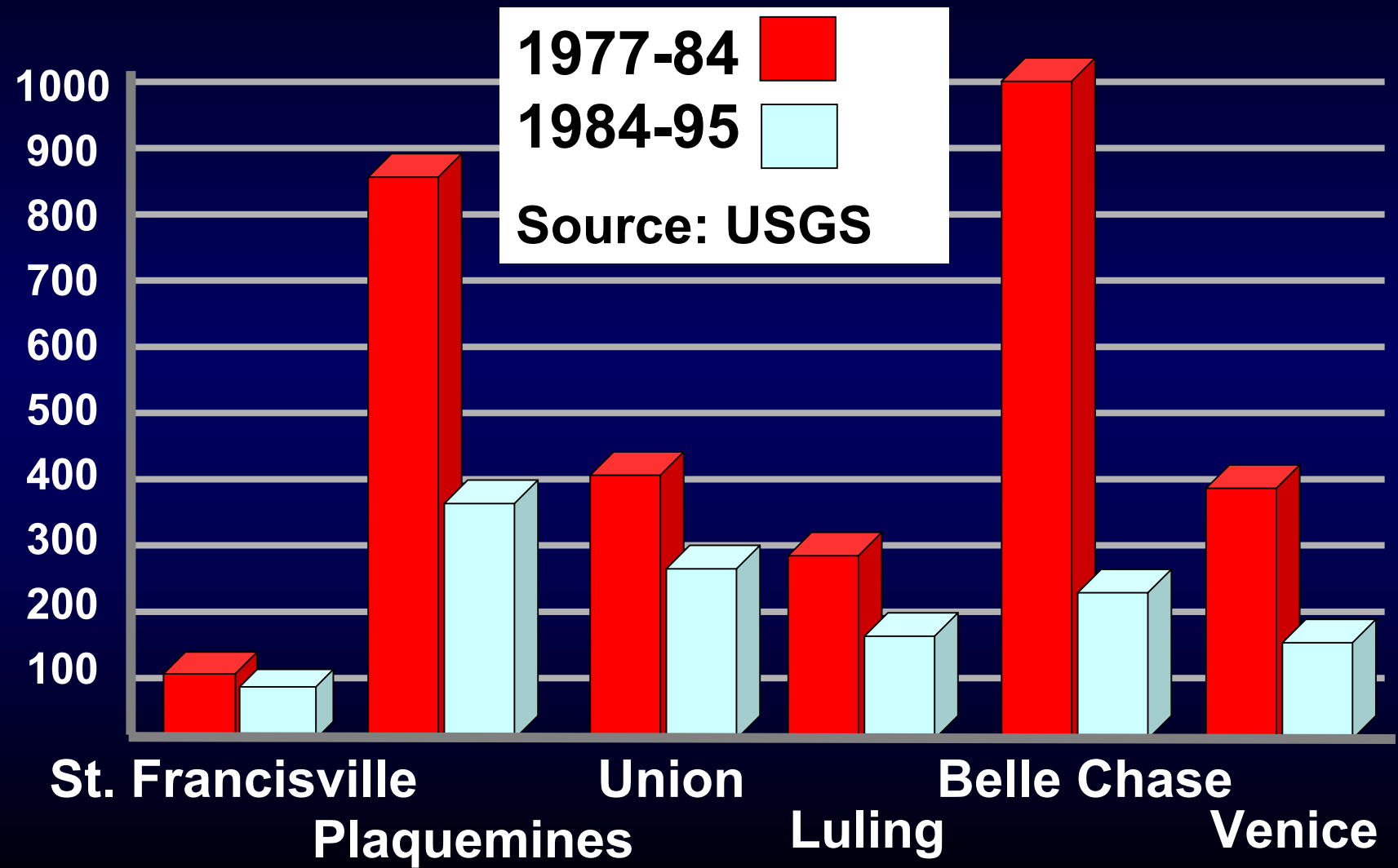


Pesticides



Median Fecal Coliform

(colonies/100 ml)

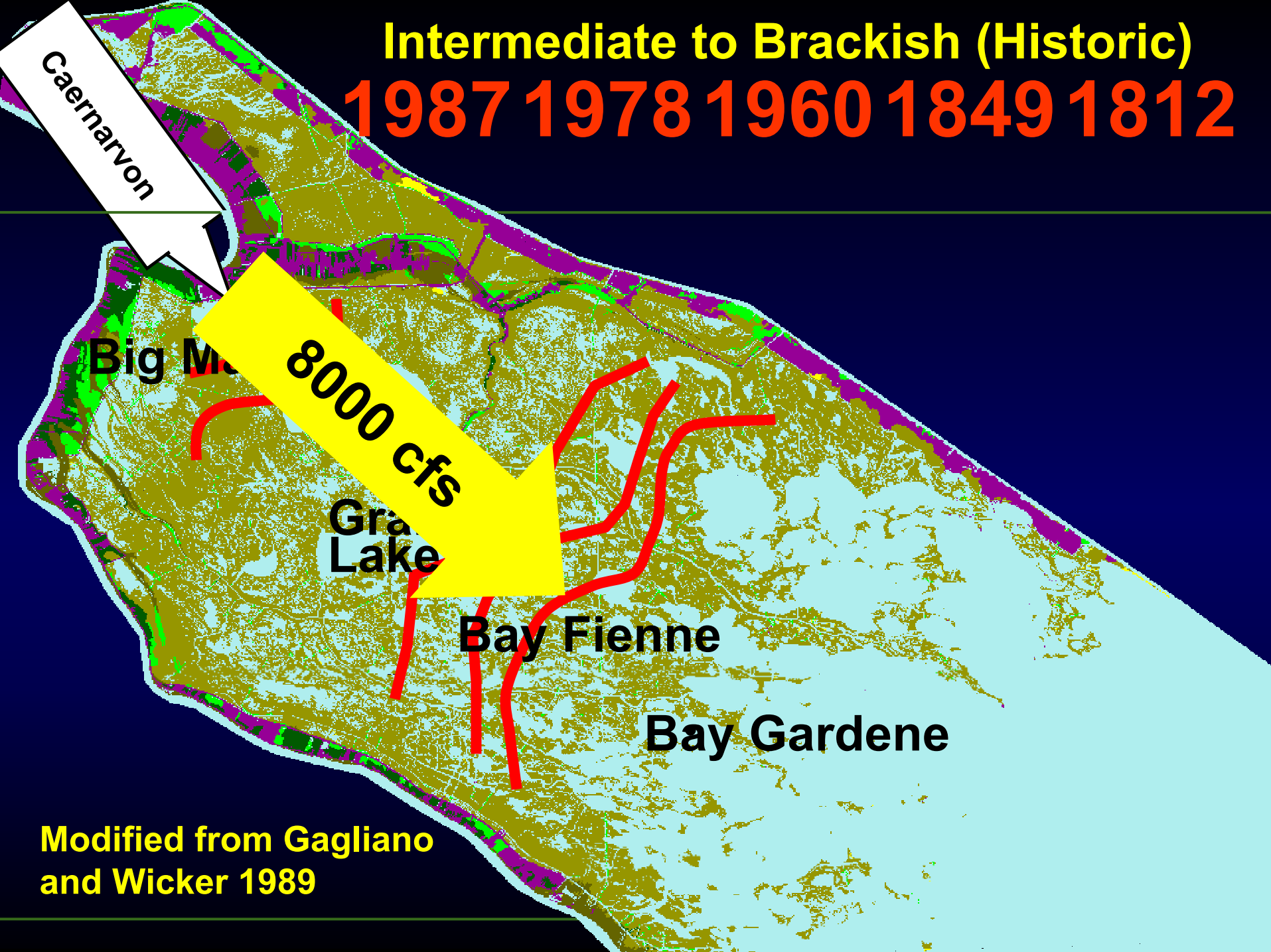


Current Monitoring Programs

- Toxic Release Inventory
- Hypoxia monitoring
- Early Warning Organic Compound Detection System

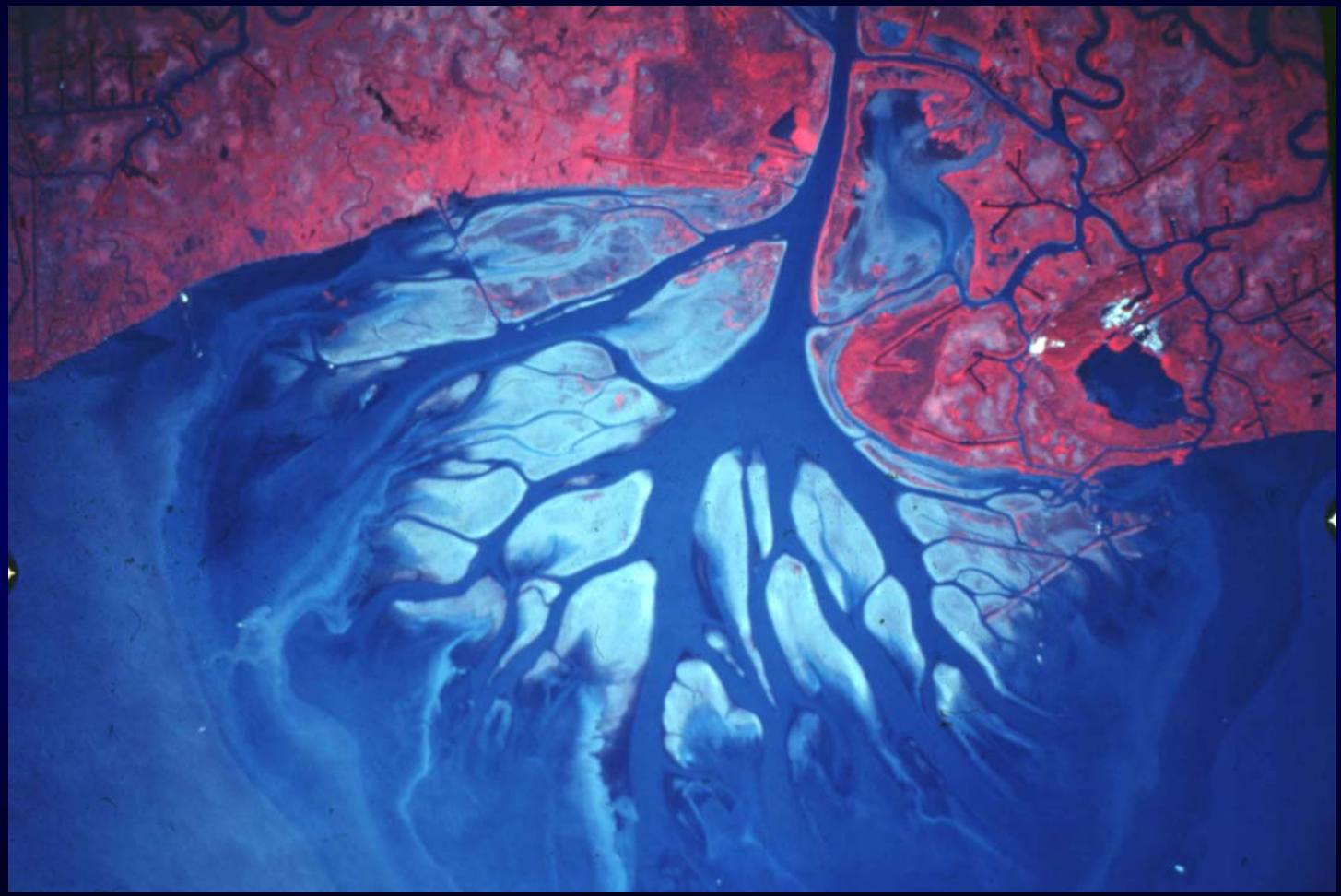
How have diversions affected water quality so far?

Caernarvon

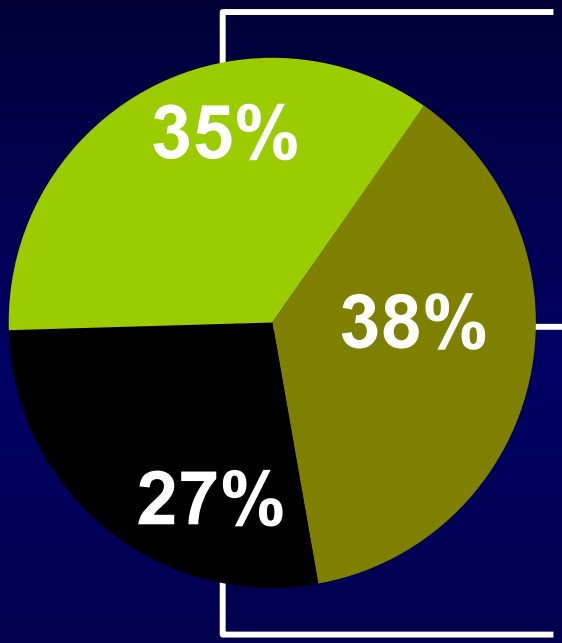

Intermediate to Brackish (Historic)
1987 1978 1960 1849 1812
Caernarvon
8000 cfs
Big M
Gra
Lake
Bay Fienne
Bay Gardene
Modified from Gagliano
and Wicker 1989

Davis Pond

Most Successful Diversion?



“Brown Marsh” 2000-2001



“Normal”
green vegetation
137,655 acres

“Moderately Impacted”
greenish/brown vegetation
143,935 acres

“Severely Impacted or Dead”
marsh is mostly brown, black, or totally devoid of vegetation
105,570 acres

Summary and Conclusions

- Mississippi River much cleaner than 30 years ago.
- Successful regulatory action of point source discharge, improved sewage treatment, restriction/elimination of pesticides.
- Nutrients and some herbicides continue to cause concern.

Summary and Conclusions

- **River is suitable for most coastal restoration projects, but....**
  - ***Salinity and fisheries continue to be a major issue***
  - ***Is the issue water quality or water clarity?***
  - ***Can we maximize the interface and retention time of River input and marsh vegetation?***

Acknowledgements